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| APPLICATION NO.                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/080,754                       | 02/22/2002  | Gerald W. Fly        | 8540G-000058        | 9350             |
| 27572                            | 7590        | 08/18/2004           | EXAMINER            |                  |
| HARNESS, DICKEY & PIERCE, P.L.C. |             |                      | CHANAY, CAROL DIANE |                  |
| P.O. BOX 828                     |             |                      | ART UNIT            | PAPER NUMBER     |
| BLOOMFIELD HILLS, MI 48303       |             |                      | 1745                |                  |

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                          |                  |
|------------------------------|--------------------------|------------------|
| <b>Office Action Summary</b> | Application No.          | Applicant(s)     |
|                              | 10/080,754               | FLY ET AL.       |
|                              | Examiner<br>Carol Chaney | Art Unit<br>1745 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 June 2004.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-4,6-18,20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) \_\_\_\_\_ is/are rejected.
- 7) Claim(s) 6-8,11,12,20 and 21 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

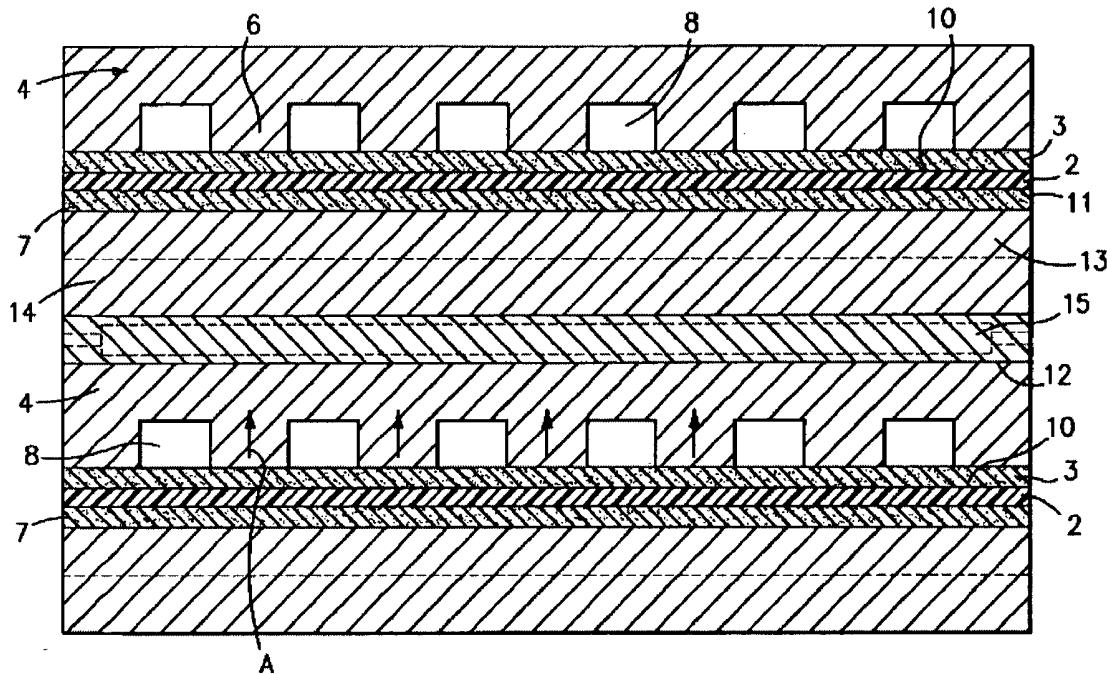
- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

***Claim Rejections - 35 USC § 102***

Claims 1, 3, 13, 15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Cipollini, US Patent 6,258,476 for reasons of record.

Cipollini discloses a solid polymer membrane fuel cell which includes a membrane electrode assembly having a membrane (2), with a first catalytic layer (3) on a first face of the membrane, and a second catalytic layer (7) on a second face of the membrane. A first bipolar plate assembly (4) is adjacent the first catalytic layer (3) and is in electrical contact with the catalytic layer. The bipolar plate includes a gas distribution layer having a plurality of porous reactant gas flow channels (8) which extend transversely through the gas distribution layer, in a generally parallel orientation. (See Fig. 2.) Clearly, the porous reactant gas flow channels (8) are in fluid

communication with catalytic layer (3).



**FIG. 2**

The side (12) of product water plate (4) forms the wall of coolant water channel (15). Since the plate is formed from carbon, it is electrically conductive. Since (12) is between cells, it is a separator plate. (Note column 5, lines 11-35; column 5, lines 60-61; and Fig. 2, reference numerals 2, 3, 4, and 7). The second bipolar plate assembly disclosed by Cipollini (14) is adjacent to catalytic layer (7), and includes porous reactant gas flow channels (13) which are in fluid communication with catalytic layer (7).

Claims 2, 4, 9, 10, 14, 16, 18, rejected under 35 U.S.C. 103(a) as being unpatentable over Cipollini for reasons of record.

***Allowable Subject Matter***

Claims 6-8, 11, 12, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. With regards to claim 8, the prior art does not suggest a fuel cell with a convoluted membrane electrode assembly and a convoluted surface of a gas distribution layer. With regards to claims 11 and 12, the prior art fails to suggest a fuel cell comprising a porous conductive interface layer between a gas distribution layer and a catalytic layer. With regards to claims 20, 21, 6 and 7, the prior art does not disclose or suggest the fuel cell structure as claimed, wherein leg portions and barrier portions are formed within the porous reactant gas flow channels.

***Response to Arguments***

Applicant's arguments filed 02 June 2004 have been fully considered but they are not persuasive. Applicants submit that the cited reference does not expressly or implicitly teach "a plurality of porous, reactant gas flow channels extending transversely through (a) gas distribution layer in a generally parallel orientation, a first face of said ( ) gas distribution layer confronting said first catalytic layer such that said plurality of porous, reactant gas flow channels are in fluid communication with said first catalytic layer." As noted above, Cipollini discloses a "gas distribution layer" in the form of plate (4) described as a "cathode reactant gas flow field plate". See Cipollini, column 5,

line14-17). As shown in Cipollini Fig. 2, porous reactant gas flow channels are included in the gas distribution layers as reference numbers 8 and 13 and these channels are in fluid communication with the catalytic layers (3, 7). Channels 8 and 13 are porous in the sense that they are permeable to fluids.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Carol Chaney  
Primary Examiner  
Art Unit 1745

12 August 2004